NASA AMES RESEARCH CENTER

Web-Based Hazard Reporting System

General User Guide

Table of Contents

Introduction

Hazard reporting is an important day to day operation handled by the System Safety, Reliability, and Quality Assurance Office. In this age of the "paper-less office" and "faster, better, cheaper," a solution needed to be developed to handle the reporting process more efficiently than in the past.

In the past, several different computerized systems where used by different localized groups with no electronic communication between them. As a result, there was very little commonality or compatibility. A new system needed to be developed that could be accessible to all groups who needed it. It had to cross communications and platform-related barriers and be reached from anywhere. It had to act as a central storage point for all hazard related information. It had to do all this and remain friendly and easy to use.

The solution was to develop a web-based system using a database to store the hazard reports, and a web server to make the data available. All user access will be accomplished through a platform independent web browser. User will be able to enter and update new hazard reports, as well as search and print existing ones.

To accomplish this separation between new and existing hazard reports, several different categories of record classifications needed to be developed. These categories are referred to as "Workspace modes." These modes identify which state of the creation process a hazard report is in. The following is a description of the workspace modes:

DRAFT
The DRAFT mode can be viewed as a personal workspace, where only the owner can access the reports. A partial report can be entered into the system under the DRAFT mode without being reviewed until the owner deems appropriate. The owner can alter, update, and remove any report in their DRAFT space. Only the owner can promote a report to the next level.
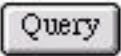
REVIEW
The next level of the hazard report creation process is the REVIEW mode. Reports with this mode can be seen by all users with entry and comment privileges for the project or facility specified in the report. Those reviewing the reports can make remarks on the report in a special Comments page. The owner of the report can continue to alter and update them. The REVIEW mode is a traced environment. When alteration are made to a report, a revision is logged. The user must enter a brief comment or explanation for the revision. Delete privileges are only given to users with administrator privileges or higher. Once all the data has been entered and a close date has been established, the report can be promoted to the final level.

CONTROL
The CONTROL mode is the final designator for hazard reports. Once a report has been given the CONTROL mode, it is viewable to all users. These records are no longer alterable. Only a user with administrator privileges or higher can promote a report to the CONTROL mode.

Conventions

Screen Conventions

Convention	Explanation
?	Help button: Click to link to the context-sensitive help page.
Query	Event button: These are used to submit a form, or call a menu.
Yes● No○	Radio buttons: Only one value can be chosen. (Like the preset buttons on a radio.)
☒	Check box: This is a selection box. An "**X**" (or "✔") means the item has been chosen.
▼	List box: The arrow indicates a drop-down list of valid options for the field.
HERE	Hypertext link: This link will jump to a place on the page, or to a new page.

Manual Conventions

Convention	Explanation
Hazard Report Query	Menu option / Hypertext link
Query	Button
Start	User enter text or commands
<user name>	Text to be replaced by user value

Starting

Security

The Hazard Reporting system has multiple levels of security. These security levels are project specific. This means that for one project, a user may have administrator privileges, and query only privileges for another.

Security is handled through web browser cookies. This means that when a user enters the system, the information about privileges is written to a small file on the user's computer. This file must exist before the user can continue to any of the pages within the system.

Do not bookmark pages within the system! The security cookie has an expiration date. Even though the user has been in the system in the past with a correct user name and password, the system will not allow them to access anything. The user MUST enter through the Startup Screen to ensure property security and privileges.

Security Level Description
0   No privilege
1   Query Only
2   Enter/Comment - User can enter Hazard Reports and make comments
3   Administrator - User has the privilege to control and transfer Hazard Reports in addition to access to the maintenance tables.
4   Superuser - User can access all Hazard Reports and alter ownership, in addition to Administrator privileges.

Startup Screen

Before a user can enter the system, a user name and password must be entered. To do this:
1. Select the name from the list box.
2. Enter the password
3. Click the **Continue…** button
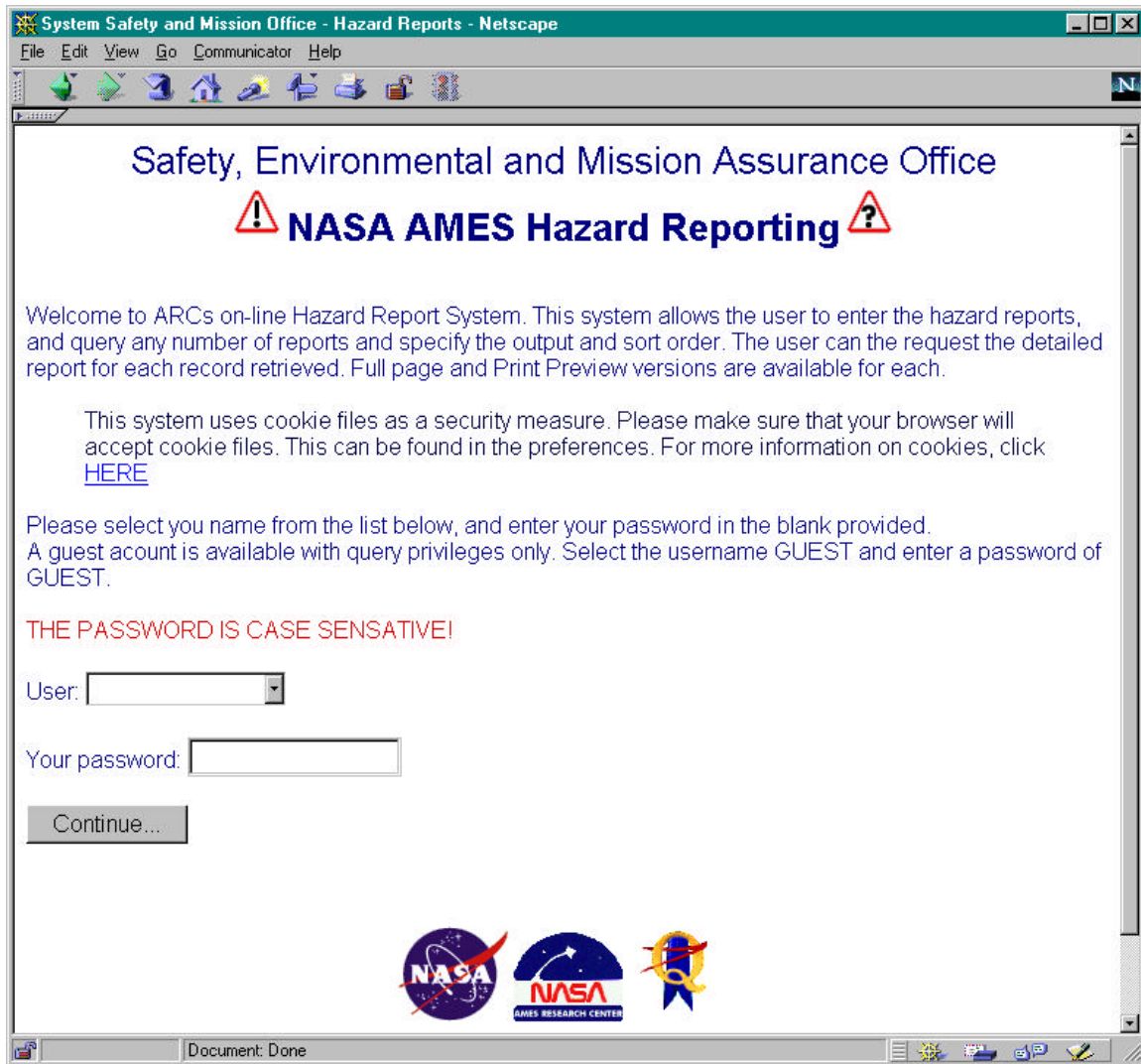
This will launch the security page. If the password matches the user name, and the privileges are established, the user will be allowed to continue.

Menu Structure

The Main Menu is the point in which all functions can be accessed. In addition to the Hazard Reporting functions, there are also key NASA links provided.

The **Hazard Report Query** module is the primary search page. This page allows the user to query any number of hazard reports based on search criteria. Several detailed report formats are available for viewing.

The **Saved Hazard Report Queries** module is used to run previously saved query parameters. This is one-touch report generation.

The **Hazard Report Entry** module is used to enter the hazard report. Access to this page is restricted to users with "Entry/Comment" privileges.
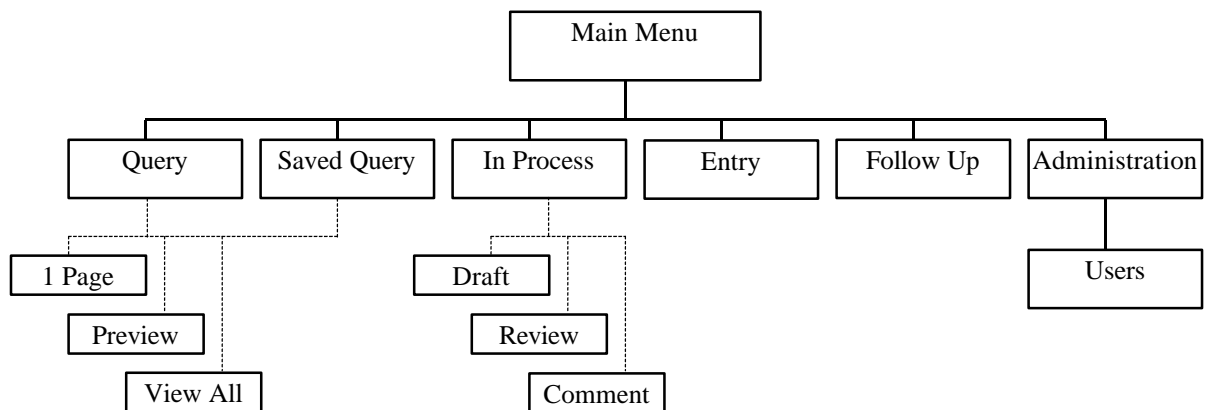
The **Hazard Report In Process** module is used to access the Hazard Reports in the various states of creation. Owners edit their Hazard Reports in "draft" or "review". Others can comments on the Hazard Reports in "review." Follow up information can also be accessed.

The **Hazard Report Sign-Off** module is used to electronically sign off on hazard reports. A user "signs" by clicking a check box next tot the hazard report number. Once a user signs, the next user is notified by email.
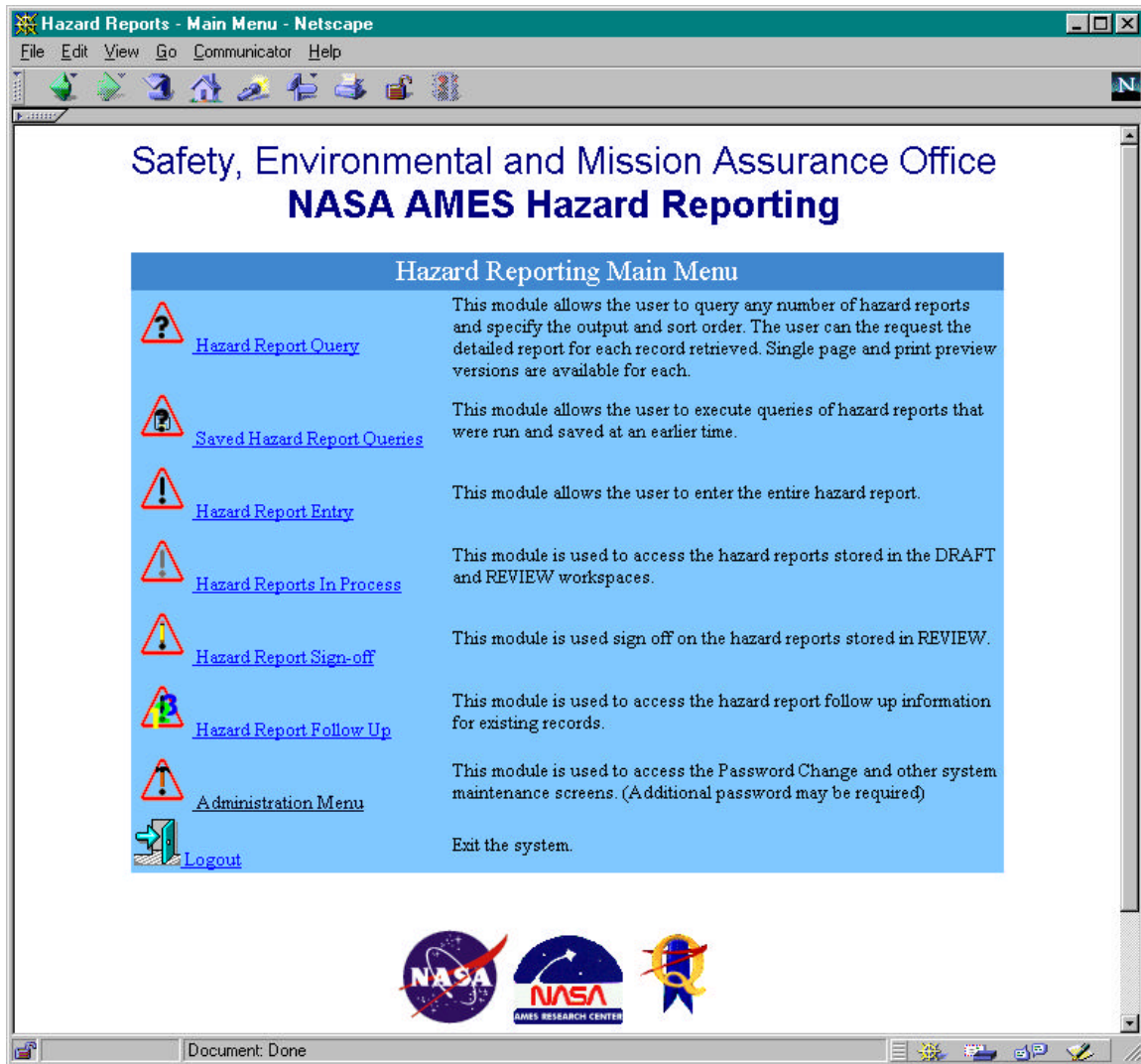
The **Hazard Report Follow Up** module allows the user to access the additional information not found on the Hazard Report.

The **Administration Menu** provides the user links to various system administration functions. General users can also access the Change Password page.

The **Logout** allows the user to exit the system and remove the security cookie from the local computer.

```
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   ┌──────────┐              ┌──────────┐
   │ Preview  │              │  Review  │
   └──────────┘              └──────────┘
      ┌──────────┐              ┌───────────┐
      │ View All │              │  Comment  │
      └──────────┘              └───────────┘
```

To access one of the menu options, click on the underlined hypertext link in the menu.

Safety, Environmental and Mission Assurance Office
NASA AMES Hazard Reporting

Hazard Reporting Main Menu

Hazard Report Query
This module allows the user to query any number of hazard reports and specify the output and sort order. The user can the request the detailed report for each record retrieved. Single page and print preview versions are available for each.

Saved Hazard Report Queries
This module allows the user to execute queries of hazard reports that were run and saved at an earlier time.

Hazard Report Entry
This module allows the user to enter the entire hazard report.

Hazard Reports In Process
This module is used to access the hazard reports stored in the DRAFT and REVIEW workspaces.

Hazard Report Sign-off
This module is used sign off on the hazard reports stored in REVIEW.

Hazard Report Follow Up
This module is used to access the hazard report follow up information for existing records.

Administration Menu
This module is used to access the Password Change and other system maintenance screens. (Additional password may be required)

Logout
Exit the system.

Hazard Report Searching

The query form is present in a format that is similar in appearance to the formal Hazard Report. This is to maintain a feel of familiarity for those users comfortable with the report format. Some follow-up searching is also provided.

The query is a multiple step process. The first step is to enter the search criteria. Enter values in the fields provided to help narrow the search. Use of wildcards is allowed.

Wildcards

The "%" (percent sign) is a multiple character wildcard. This means it can be used in place of a string of characters.

EXAMPLE: "R%N" returns "RAIN," "RAN," "RUN," and "RADON"

The "_" (underscore) is a single character wildcard. It replaces one letter, number, or special character.

EXAMPLE: "R_N" returns "RAN" and "RUN," but not "RAIN" or "RADON"

If all fields are left blank, every record the user has access to, will be retrieved. To select a value from a list box (like Projects or Hazard Type), click and hold the mouse button when the pointer is on the box. Drag the pointer to the desired option, and release the mouse button. Dates must be in the format: **DD/MM/YYYY**. This will avoid any issues with the "Year 2000" problem.

The second step is to the type of tabular report to be displayed. Clicking on the radio button next to the report name will establish the format. If **Custom** is clicked, the user must select the fields to be displayed. Click the checkbox to the left of the field name to select it. A title may be entered for a custom report. The *Details* checkbox will provide a link on the tabular report to access the detailed formats available.
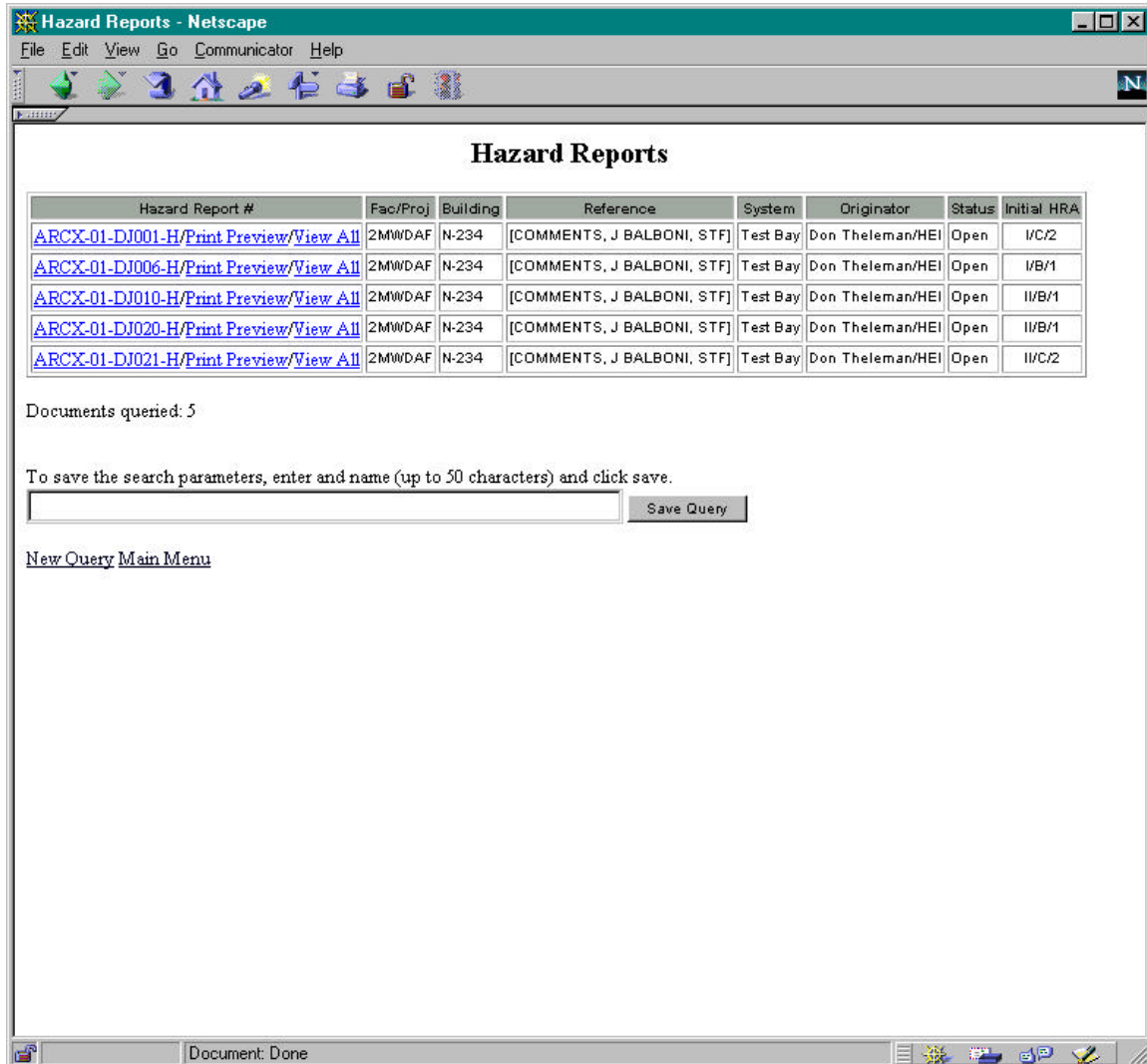
Report formats

One Page - This is the entire Hazard Report on one scrolling page. This is accessed by clicking the underlined Hazard Report number.

8

Print Preview - This is the Hazard Report in its formal multiple page format. To access the other pages of the report, click the link at the bottom of the page.

View All - This is a plain text report showing any information about the hazard reports, including comments, revision history, and follow up information.

The third step is selecting the sort order. Click the radio button next to the desired order. Only one option may be selected.

The last step is to click the **Query** button. This will launch the search.

Above is an example of the tabular report generated by the search. The links to the different Hazard Report formats are found in the **Hazard Report #** column. Note that the query parameters can be saved - not the query results. (See the *Saved Queries* section.)

To recap…

<div style="border:1px solid black;">

Step 1: Enter the search parameters in the form.

Step 2: Select the report format.

Step 3: Select the sort order.

Step 4: Click the **Query** button.

</div>

Hints

Make the query as specific as possible. Fill in as many fields as possible. This will reduce the report generation time, and avoid memory problems. The search parameters are connected using AND. This means that the records returned must match all of the parameters.

Display only the fields you need to see. Using all of the fields may make the report very wide and confusing. A smaller number of fields will also reduce generation time.

Select a sort order that best suits you needs. For example, for a timeline search, sort by date.

Following these suggestions will make querying more useful.

Saved Queries

The system has the capability of saving query parameters. This allows a user to rerun the same search in the future. This does not mean that the results will always be the same. As records are added to the system, some of these may add to the results of a saved query. Saved queries are very useful for monthly status reports and anything that would require you to enter in the same parameters over and over.

Saving Queries

Once a query has been entered, the user can save the parameter set. This allows the user to run the same queries over again without retyping the parameters. This is done by entering a unique name in the blank provided at the bottom of the query page. Once the name has been entered, click the **Save Query** button.

Running Saved Queries

The saved queries can be accessed from the Main Menu. In the Main Menu, click the **Saved Hazard Report Queries**. This will open a page with the list of saved queries. To run a saved query, click the **Run Query** button next to the desired query. This will generate the list of hazard reports that match the search parameters.
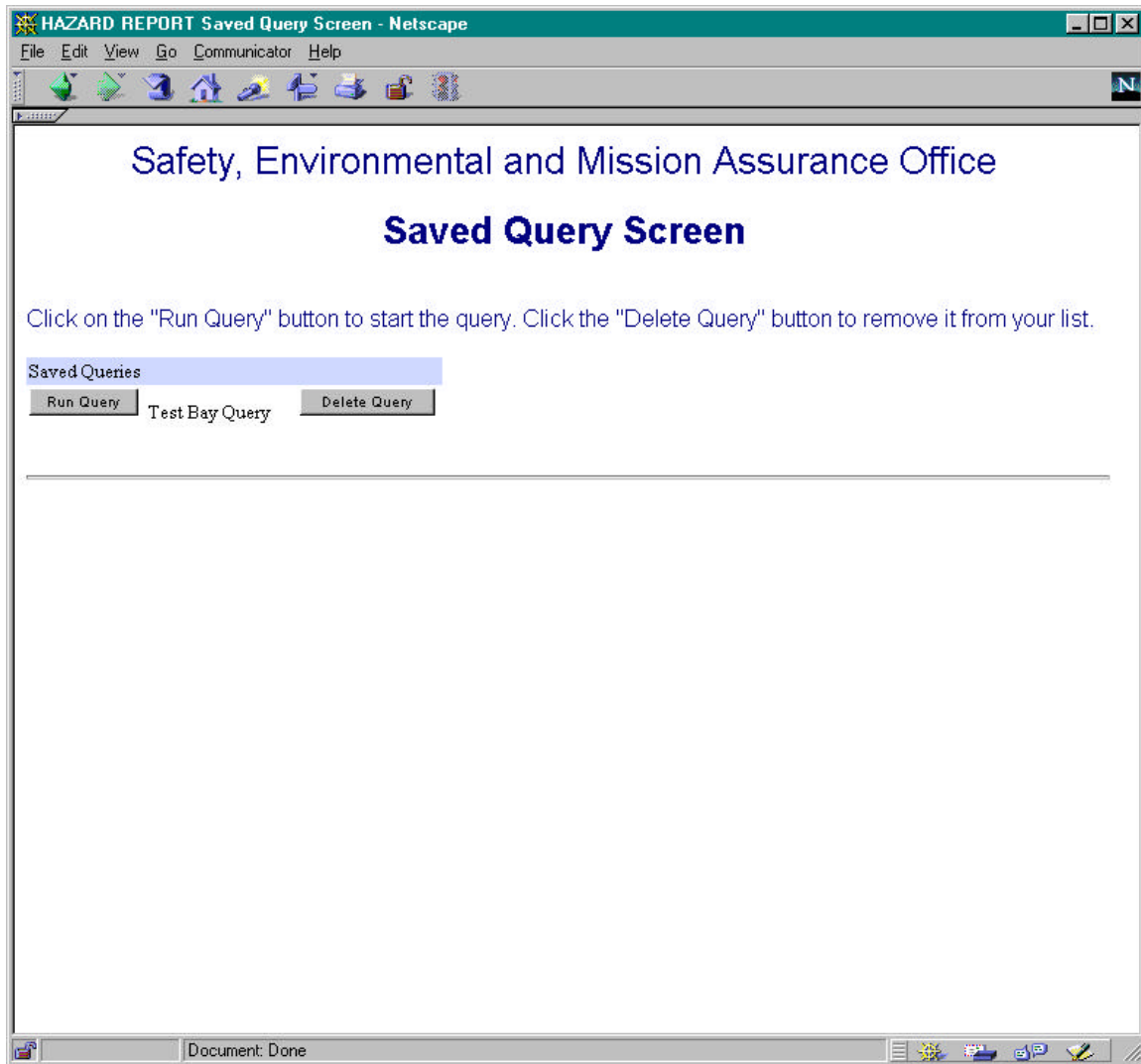
Deleting Saved Queries

The saved queries can be accessed from the Main Menu. In the Main Menu, click the **Saved Hazard Report Queries**. This will open a page with the list of saved queries. To delete a saved query, click the **Delete Query** button next to the desired query.

Hazard Report Entry

The Hazard Report Entry page is used to enter a fresh hazard report record. If the hazard report does not exist in the system, this is where it must be entered. If it does exist, it must be accessed through the **Hazard Reports In Process** page. A couple of factors in the output of the report are determined by the project used. These factors are whether or not to use the REVIEW BOARD block, or to display the instructions. The automatic numbering scheme (NASA center - Project code - sequence # - H) is also determined by project.

To customize the title of the report, click on the TITLE field at the top of the page. Type over the existing title. This new title will follow the report through the entire lifecycle.

Block 1 (fields 1 through 4)
Select the project or facility for the first field. If the project or facility does not exist in the list, notify the system administrator. In the remaining fields, enter the building, reference, and system.

Block 2
The system should auto-generate a Hazard Report number once the record has been elevated to the REVIEW stage. The following is the established procedure for establishing a Hazard Report number:

Identification of the Originating NASA Center - A four letter code identifying the specific NASA Center.

End-item Identifier - A two letter code identifying the end-item.
01 - Facility
02 - Spacecraft
03 - Aircraft

Project and Hazard Identifier - A two letter code assigned to the project. The remainder is a sequential number.

Code Letter - This is a code used to designate the type.
A - Action Item
H - Hazard
N - Nonconformance Report (NCR)

For the DRAFT mode, a temporary hazard report number can be assigned (e.g. JAH001) to identify the record for future edits. This temporary number will be replaced by the system.

Select the values for the STATUS and HAZARD TYPE fields from their respective list boxes. Enter any keywords that would aide in future searches. If the hazard Report is closed, enter the CLOSE DATE in the format: MM/DD/YYYY.

Block 3 (Field 5: Hazard Description)
The Hazard Description has three parts: the hazard, the causes, and the worst case effects. The CAUSES field is a large scrolling text field.

Block 4 (Field 6: Existing Controls)
Enter the existing controls in the large scrolling text field.

Block 5 (Field 7: Initial Hazard Risk Assessment)
Select the appropriate values from the list boxes for SEVERITY and PROBABILITY. Then select the HRA based on the values enter for the first two. For a detailed description of the HRA matrix, click the help button (**?**) in the block.

Block 6 (Field 8: Recommended controls and Originator)
Enter the recommended controls in the large scrolling text field. Then enter the originator, their organization, and the date. Remember to use the format: MM/DD/YYYY.

Block 7 (Field 9: Planned Actions & Completion date)
Enter the planned actions in the large scrolling text field. Enter the estimated completion date using the format: MM/DD/YYYY.

Block 8 (Facility Manger)
Then enter the facility or project manager. The "signing" date will be entered when that person has "signed off" on the HR.

Block 9 (Verification)
Enter the methods of verification in the large scrolling text field. Then enter the verifier. The "signing" date will be entered when that person has "signed off" on the HR.

Block 10 (Field 11: Final Hazard Risk Assessment)
Select the appropriate values from the list boxes for SEVERITY and PROBABILITY. Then select the HRA based on the values enter for the first two. For a detailed description of the HRA matrix, click the help button (**?**) in the block.

Block 11 (Field 12: Review Board - *Optional*)
Then enter the facility or project manager. The "signing" date will be entered when that person has "signed off" on the HR. This block may not appear for some projects. It is an option set by the system administrator.

Block 12 (Field 13: Residual Risk Acceptance)
Enter the appropriate names and signature tags for the level of final risk assessment. Signature tags can be selected from the list box. The defaults are NASA tags. If a desired tag does not exist, notify the administrator. If a tag is left blank, that line will not appear on the final report. The "signing" date will be entered when that person has "signed off" on the HR.

Block 13 (Field 14:Hazard Closure)
Enter the appropriate names and signature tags for the level of final risk assessment. Signature tags can be selected from the list box. The defaults are NASA tags. If a desired tag does not exist, notify the administrator. If a tag is left blank, that line will not appear on the final report. The "signing" date will be entered when that person has "signed off" on the HR.

Destination:
The user has the option of saving a Hazard report to several different "workspace modes." DRAFT saves the record in a workspace where only the owner and privileged superusers can access it. This is for Hazard Reports under development that are not to be reviewed yet. REVIEW mode allows privileged users to comment on the Hazard Report while it is being developed. CONTROL is the finalized mode where "query only" users can view it.

Saving

Once the values have been entered, press the **Save** button. If the record is saved properly, the Hazard Report will be displayed with the information in it. If a problem occurred, an error message explaining the problem will be displayed.

E-Mail notification
If a record is saved with a close date, and the user is not privileged to control, an optional e-mailer is displayed in the save screen. This will give the user the ability of firing off an e-mail to the responsible person(s) notifying them of a Hazard Report that needs to be controlled.

The example above shows the blanks for the optional email for a closed hazard report. The e-mail can be sent to multiple people with comments to be included in the note.

There is an additional optional step to add file links. At the bottom of the Save page, click the **Filenames** link. This will launch the Filename Link page. Enter the ENTIRE web path of the file and a description. Press **Save** when done.

To recap…

> Step 1: Enter the Hazard Report data in the form fields. Date format: MM/DD/YYYY
>
> Step 2: Select the destination mode.
>
> Step 3: Click the **Save** button. Optional "closed HR" E-mail notification.
>
> Step 4: Click the **Filenames** link to enter the file links.

Hazard Report Updating

Once a record has been entered into the system as either "Draft" or "Review," it can be accessed through the **Hazard Report In Process** page. This page displays several groups of records. The first group is the users "Draft" records. These records can be edited, viewed, or deleted. The second group of records is the "Review" records. These records commented on or viewed. The owner has the additional privilege to edit and delete. Superusers will have a third group containing the "Control" records.

DRAFT Records

To view a draft record, click the **Preview** link. This will display the Hazard Report in the formal multi-page format.

To edit a draft record, click the **Work** link. This will open a page very similar to the entry screen. The form will contain the values previously entered for the record. Type over these values to them. If the report is complete enough to be reviewed, the Destination can be changed to REVIEW. Once the values have been entered, press the **Save** button. If the record is saved properly, the Hazard Report will be displayed with the information in it. If a problem occurred, an error message explaining the problem will be displayed.

> *E-Mail notification*
> If a record is saved with a close date, and the user is not privileged to control, an optional e-mailer is displayed in the save screen. This will give the user the ability of firing off an e-mail to the responsible person(s) notifying them of a Hazard Report that needs to be controlled.

There is an additional optional step to add file links. At the bottom of the Save page, click the **Filenames** link. This will launch the Filename Link page. Enter the ENTIRE web path of the file and a description. Press **Save** when done.

To delete a draft record, click the **Delete** link. A confirmation page will be displayed. If you are sure this is the record you want to delete, click the **Delete** button at the bottom of the page.

REVIEW Records

To view a review record, click the **Preview** link. This will display the Hazard Report in the formal multi-page format.

To edit a review record to which you are the owner, click the **Review** link. This will open a page very similar to the entry screen. The form will contain the values previously entered for the record. These values can be changed by typing over them. Once the values have been entered, press the **Save** button. Once the record has been saved as "Review," revision tracking is enabled. Before completing the save process, the user must enter a brief description or reason for the change. If the record is saved properly, the Hazard Report will be displayed with the information in it. If a problem occurred, an error message explaining the problem will be displayed.

E-Mail notification
If a record is saved with a close date, and the user is not privileged to control, an optional e-mailer is displayed in the save screen. This will give the user the ability of firing off an e-mail to the responsible person(s) notifying them of a Hazard Report that needs to be controlled.

There is an additional optional step to add file links. At the bottom of the Save page, click the **Filenames** link. This will launch the Filename Link page. Enter the ENTIRE web path of the file and a description. Press **Save** when done.

Commenting

To comment on a hazard record, click on the **Review** link in the REVIEW workspace check. A page will be displayed containing the record. At the bottom of the page, there are several links: **Enter Comments**, **View Comments**, **View Revision History**, **Filenames**, and **Follow up**. Click the **Enter Comments** link to launch the comment page. Select the block to comment on from the list box. Enter the comments in the large text field. Click the **Save** button when done.

After the comment has been saved, an optional e-mail can be sent to the originator.

Sign-Off

Hazard Reports are signed off through an electronic process. The originator can spawn an e-mail to the first person to sign off on a Hazard Report. Once that person has signed off, the next person in the chain is e-mailed.

The signing process is handle in it's own module that can be accessed from the main Hazard Report System menu. Once in the Sign-Off page, the user has several options. The first option is to sign the HR. To sign off on a HR, select "SIGN" in the drop-down list next to the number. It is possible to sign a Hazard Report out of sequence, so, to maintain the signing sequence, please view the HR before you "sign". To do this, click on the HR #.

The second option is to reject a hazard report. To reject a HR, select "REJECT" in the drop-down list next to the number. This will notify the originator of the rejection via an e-mail.

The last option is to skip the record. Leaving the "Sign/Reject" column blank will make the computer skip the hazard report and leave it unchanged.

When finished, click the **Done** button at the bottom of the page. Remember to use the **Back** button to return to the SIGN-OFF page.
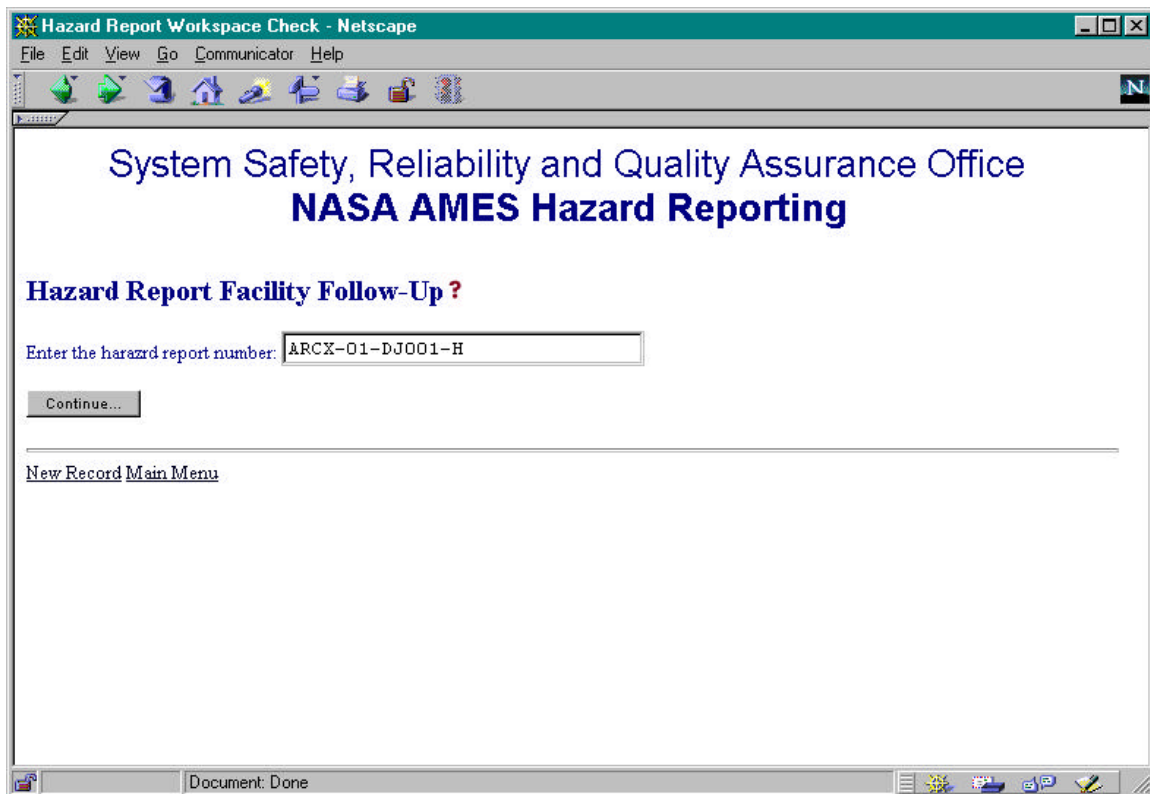

In Review:

- To sign off on a HR, select "SIGN" in the drop-down list next to the number.
- To reject a HR, select "REJECT" in the drop-down list next to the number.
- To view the HR, click on the HR #.
- Click **Done**.

Follow Up

The follow up module allows a user to review or add information to be tracked with the Hazard Report that is not found on the formal form. A user must have "Entry / Comment" privilege to access this module. A user can also access the follow up information directly from the "Draft" and "Review" section of the **Hazard Report In Process** module.

The first step is to enter the Hazard Report number, and press the **Continue…** button. This will launch the follow up information page for the record.

The next step is to fill in the available fields. The PROJECT STATUS flags the record as referring to an operational or non-operational project. The HISTORICAL flag allows the record to remain open for historical purposes and not appear in an "open" hazard report list. The PROJECT ENGINEER, FACILITY ENGINEER, and SUBCONTRACTOR fields are list boxes with all the available names. If a name does not appear, notify the system administrator. The PHASE selection is a check list. More than one can be chosen.

The PHASE RECOMMENDATIONS are list boxes containing general and project specific options. If the desired value does not appear, notify the system administrator.

```
HAZARD REPORT Follow-Up Entry Screen - Netscape
File  Edit  View  Go  Communicator  Help
```

1. Type in the new data (or type over the old,) to change. 2. Click the SAVE button at the bottom of the page.

NASA AMES RESEARCH CENTER
HAZARD REPORT FOLLOW-UP

Hazard #: ARCX-01-DJ001-H Rev: 1

Project Status: OPERATIONAL

Phase: ?   ☑ Design   ☑ Contruction
           ☑ Test   ☑ IST
           ☑ Operation

Historical: ○ Yes | ◉ No

Project Engineer:

Facility Engineer:

Subcontrator:

Recommendations

Design:

Development:

Verification:

Analysts Comments:

This duplicates what we have in Hazard Report Comments/RL. It requires that the

To do:

```
Document: Done
```

The last two fields are large text areas. The first is the ANALYSTS COMMENTS. This is to be used for any additional comments not directly related to the information found on the Hazard Report. The second is the TO DO area.

If data already exists in the fields, type over it, or make a new selection from the list.

Administration for the General User

The only administration module available for the general user is one for changing the user password. From the Main Menu, click the **Administration** link. This will display a limited administration menu. Select the **Users** link to launch the change password module.

In the first field, enter the original password. The password will appear as a series of dots in the field. This is to hide the password.

In the next field, enter the new password. Since the password is not visible, re-enter the same new password in the CONFIRMATION field. This will insure that no typos where made. If the two new passwords do not match, the user will be required to re-enter them.

Appendixes

Appendix A: Definitions

Bookmark: An address tag that points to a page on the WWW.

Browser: Software that provides an interface to the World Wide Web.

Cookie: Cookies are a general mechanism which server side connections can use to both store and retrieve information on the client side of the connection. The addition of a simple, persistent, client-side state significantly extends the capabilities of Web-based client/server applications.

HTML: Hypertext Markup Language is a language specification for the transfer of text, menus, and graphics between a WWW server and a client.

HTTP: Hypertext Transfer Protocol is an Internet Protocol intended for the retrieval of hypertext information from a WWW server.

Internet: A collection of two or more disparate networks tied together via a common protocol. More specifically, it refers to the global connection of IP-linked computer networks that developed from the Army's ARPAnet. TCP/IP was originally developed to link the ARPAnet's computers together.

IP: Internet Protocol. The network layer responsible for packetizing, addressing, and forwarding data.

Radio button(s): Radio buttons are a group of buttons linked together so that only one of them can be selected at one time. They are much like the programmed station buttons on a car radio.

RDBMS: Relational Database Management System

Superuser: A user who has the ability to perform the widest range of functions; often overriding some lower security measures.

URL: Uniform Resource Locator is an Internet address syntax used to access a WWW server through HTTP.

Wildcard: A replacement character that represents one or more characters in a string.

WWW: World Wide Web, "The Web" - a second generation service providing multi-media-capable hyperlinks between Internet resources, regardless of their physical location.